

AMENDMENTS

Please amend the claims as follows:

1. (currently amended) A method of determining a temperature of an ultrasound transducer, the method comprising:
 - (a) receiving signals from at least one transduction element of the ultrasound transducer;
 - (b) determining a temperature-dependent property of the ultrasound transducer from the received signals; and
 - (c) determining a temperature state of the ultrasound transducer in response to ~~(b)~~ determining the temperature-dependent property.
2. (currently amended) The method of Claim 1 further comprising:
 - (d) connecting the ultrasound transducer to an ultrasound imaging system, the connection connecting the at least one transduction element to a receive beamformer channel;wherein (b) comprises determining the temperature-dependent property with components in the ultrasound imaging system, the received signals being received on connections also used for acoustic imaging signals.
3. (withdrawn) The method of Claim 1 wherein (b) comprises measuring a dielectric constant of the at least one transduction element.
4. (withdrawn) The method of Claim 3 wherein (b) comprises measuring a change in capacitance of the at least one transduction element.
5. (withdrawn) The method of Claim 3 wherein (b) comprises:
 - (b1) injection a charge onto the at least one transduction element; and
 - (b2) determining a voltage of the at least one transduction element in response to (b1), wherein (a) comprises receiving the signals in response to (b1).

6. (withdrawn) The method of Claim 3 wherein (b) comprises:
- (b1) connecting a capacitance bridge to the at least one transduction element;
 - (b2) applying an oscillating signal to a capacitance bridge; and
 - (b3) determining values for at least one of: phase, amplitude and combinations thereof from the capacitance bridge in response to (b2), wherein (a) comprises receiving the signals in response to (b2).
7. (withdrawn) The method of Claim 3 further comprising:
- (d) switchably connecting the at least one transduction element from a receive beamformer to a temperature measurement circuit.
8. (currently amended) The method of Claim 1 wherein ~~(b)~~ determining the temperature-dependent property comprises determining an acoustic property of a lens or window of the ultrasound transducer.
9. (currently amended) The method of Claim 8 further comprising:
- (d) transmitting acoustic energy with the ultrasound transducer in response to a transmit beamformer;
- wherein ~~(a)~~ receiving the signals comprises receiving echo signals responsive to ~~(d)~~ transmitting the acoustic energy and associated with lens or window depths with a receive beamformer.
10. (original) The method of Claim 8 wherein (b) comprises:
- (b1) determining, for each of a plurality of elements including the at least one transduction element, a time-of-arrival of acoustic energy; and
 - (b2) estimating a lens or window acoustic velocity from the times-of-arrival.
11. (original) The method of Claim 8 wherein (b) comprises:
- (b1) determining, for each of a plurality of elements including the at least one transduction element, a time-of-arrival of acoustic energy; and

(b2) calculating a difference for each time of arrival from a time-of-arrival profile for a known temperature.

12. (withdrawn) The method of Claim 8 wherein (b) comprises determining an amount of attenuation of the lens or window.

13. (original) The method of Claim 1 wherein (c) comprises determining a state above a preset limit.

14. (original) A method of determining a temperature of an ultrasound transducer, the method comprising:

(a) connecting elements of the ultrasound transducer to an ultrasound imaging system; and

(b) determining a temperature of the ultrasound transducer with components in the ultrasound imaging system, the determining being from signals on connections also used for acoustic imaging signals.

15-22. (cancelled)

23. (currently amended) The method of Claim 1 wherein (e) determining the temperature state comprises determining a temperature with components of the ultrasound transducer that are also used for ultrasound imaging.

24. (original) The method of Claim 1 wherein (c) is performed without added devices in the transducer for temperature measurement.

25. (withdrawn) The method of Claim 1 wherein (b) comprises measuring a frequency content of the received signals, wherein (c) comprises determining the temperature state as a function of the frequency content of the received signals.

26. (withdrawn) The method of Claim 25 further comprises:
(d) transmitting a waveform with a frequency that varies as a function of time;
wherein (b) comprises measuring a decay in response to (d).
27. (original) The method of Claim 1 wherein further comprising:
(d) performing (b) for a plurality of locations along a lens or window the transducer;
wherein (c) comprises determining the temperature state as a function of the measurements at the plurality of locations.
28. (currently amended) The method of Claim 1 wherein ~~(a)~~ receiving the signals comprises receiving the signals associated with multiple firings, and wherein ~~(b)~~ determining the temperature-dependent property comprises measuring from a combination of received signals from the multiple firings.
29. (currently amended) The method of Claim 1 wherein ~~(a)~~ receiving the signals comprises receiving the signals at different apertures on the ultrasound transducer, the received signals associated with different firings;
further comprising:
(d) shifting at least a first one of the received signals relative at least a second one of the received signals;
wherein ~~(b)~~ determining the temperature-dependent property comprises measuring from a combination of at least the shifted first received signal and the second received signal.
- 30-32. (cancelled)
33. (original) The method of Claim 1 further comprising:
(d) initiating a series of actions depending on the temperature state.
- 34-39. (cancelled)

40. (withdrawn) The method of Claim 1 further comprising:

(d) connecting the ultrasound transducer to an ultrasound imaging system, the connection connecting the at least one transduction element to a receive beamformer channel;

wherein (b) comprises determining with components in the ultrasound imaging system, the received signals on connections different than connections used for acoustic imaging signals.